

American Honda Motor Co., Inc. Comments on

The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks

October 25, 2018

Docket Nos. NHTSA–2018–0067, EPA–HQ–OAR–2018–0283

American Honda Motor Co., Inc. (Honda) welcomes the opportunity to comment on the “Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks.” Today, Honda sells more than 1.5 million cars and trucks in the U.S. annually, the vast majority of which are designed, manufactured and sold here in the United States. Honda has been among the top performers, if not the best, in fuel economy, greenhouse gas (GHG) emissions reductions, and safety since 2012 when the GHG standards were first implemented. These are more than bragging rights. They represent a deep and abiding commitment to serving our customers’ needs and interests, while also minimizing the environmental impact of our vehicles. It is this commitment that drives our product development, manufacturing and sales activity within the company. And, just as importantly, these commitments inform our comments on these proposed regulations.

In general, Honda believes the marketplace is the most effective mechanism for assuring that consumers are getting the products they want at the best possible price. Yet the marketplace clearly has limits incorporating externalities that are of societal interest but that provide little, if any, individual benefit. When there is material economic cost to meet social objectives, no single manufacturer can afford to “do the right thing” and remain competitive in the market for long. In Honda’s view, this is when government regulation, as in the case of vehicle greenhouse gas (GHG) and corporate average fuel economy (CAFE), becomes necessary.

In August 2018, the National Highway Traffic Safety Administration (NHTSA) and U.S. Environmental Protection Agency (EPA)¹ proposed the “Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks.” This proposal reflects the current administration’s position following the “midterm evaluation” of model year 2022-2025 standards, and recommends amending and/or² establishing new CAFE and GHG emissions standards for Model Year 2021-2026 passenger cars and light trucks. Overall, the proposed stringency of MY2021 and later vehicles is less stringent than the latter years of the original rules³ it effectively supplants.

¹ Henceforth referred to as “the agencies”

² Depending on model year

³ “Final Rule for Model Year 2017 and Later Light-Duty Vehicle Greenhouse Gas Emission and Corporate Average Fuel Economy Standards.” Published in the Federal Register on October 15, 2012. (77 FR 62623)

During the 2015-2016 timeframe, as part of the midterm evaluation, a broad array of stakeholders provided the agencies with feedback, policy suggestions, and rationale for both strengthening and relaxing the standards. Much of that response, including Honda's, was focused on the 2016 Draft Technical Assessment Report⁴ (DTAR), a comprehensive summary of the agencies' views on, among other things, the cost, effectiveness and consumer acceptance of fuel-saving and GHG-reducing vehicle technologies.

Feedback provided by Honda on the DTAR emphasized our company's support for the goals of a stringent CAFE/GHG National Program, while noting that optimistic agency assumptions made at that time – particularly as related to the effectiveness of fuel-saving and/or GHG-reducing technology – resulted in an underestimation of the true costs of regulatory compliance.⁵ We sought to inform the agencies of these discrepancies in order to promote better rulemaking, not as an excuse to minimize the stringency of the standards. Honda stated then, and still believes, that strong 2025 targets are both societally beneficial and appropriate as a mechanism to help drive continued innovation in the new vehicle market.

Honda was disappointed with the subsequent politicization of the midterm evaluation process, including EPA's November 2016 Proposed Determination, and January 2017 Final Determination, as well as the California Air Resources Board's (CARB's) expedited March 2017 conclusion of its own midterm evaluation process. We believe agency conclusions were, at best, hastily drawn, and ignored many of the same recommendations we are making now. As such, in March 2017, Honda was one of 18 automakers to request that – without prejudging an outcome – the midterm evaluation process be reconvened as originally envisioned. To be clear, this was an appeal for earnest implementation of an agreed-upon process and timeline, and a plea to have our analysis and reasonable requests properly considered.

Honda appreciates the agencies' work on the August 2018 proposed rule, and the opportunity to comment on it. The proposal includes a number of improvements to the agencies' assumptions and computer model underpinnings that, at least in our opinion, further align government modeling with industry experience.⁶ We commend the agencies for these actions and support these methodological improvements.

At the same time, there are important areas of disagreement. The agencies' selection of a "preferred alternative" that retains model year 2020 standards through model year 2026 jeopardizes benefits for consumers and society. The preferred alternative ends the joint Federal-California "One National

⁴ EPA, NHTSA and CARB. "Draft Technical Assessment Report: Midterm Evaluation of Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards for Model Years 2022-2025" EPA-420-D-16-900. July 2016.

⁵ See, for example, <https://www.regulations.gov/document?D=EPA-HQ-OAR-2015-0827-4313>

⁶ We are referencing the main Volpe model that evaluates costs and efficiencies and the application of technologies to models. We are not endorsing the agencies' new scrappage model that will be discussed in Section III B. 3.

Program” (ONP) framework, invites litigation and regulatory uncertainty, stalls long-term strategic industry planning, puts at risk American global competitiveness, exacerbates climate-related environmental impacts, and slows industry readiness for a widely acknowledged – but extremely difficult to implement – transition to vehicle electrification. As such, Honda does not support the agencies’ preferred path.

We recognize there are philosophical differences between the federal and California policymakers that govern our vehicle regulations. However, we urge both parties to engage in a data-based analysis and seek a more reasoned solution that maintains ONP, yields meaningful annual increases in stringency, provides regulatory flexibility and includes policy support for the development of next-generation (electric) technologies. Such an agreement would sidestep not only the sizable logistical burden of complying with a state-based patchwork of regulations, but also help avoid regulatory pendulum swings, years of litigation, and related regulatory uncertainty that are anathema to industry’s strategic planning efforts. With sincere participation from both parties, we believe the goal of maintaining ONP is achievable. Doing so would allow this administration to help reduce unnecessary regulatory burdens and costs, help California sustain its drive towards electrification, and provide society more environmental benefits than California could achieve by its own regulatory efforts. Industry will continue along a societally beneficial trajectory that is already well underway, while at the same time providing necessary flexibility to manage a significant, challenging shift toward electrified vehicles.

Honda generally supports comments to this docket submitted by our trade association, Global Automakers. Below, we provide further perspective, context, and emphasis on certain points, as well as note points where we have significant differences of opinion with Global Automakers. We appreciate the agencies’ consideration of Honda’s input, and are happy to answer any questions the agencies may have.

I. About Honda

A longstanding leader in clean and fuel-efficient vehicle technologies, Honda has been producing automobiles in America for more than 35 years.⁷ Honda was among the earliest supporters of, and was a signatory to, early initiatives of a single national program harmonizing CAFE and light duty vehicle GHG emissions standards. The company is a vocal proponent of technology neutral, performance-based standards (including CAFE and GHG standards), which – when properly structured – can help drive innovative ideas to reduce petroleum consumption and GHG emissions. While such regulations present sizable technical and market adoption challenges, they have proved to be an effective tool in helping reduce adverse societal impacts attributable to the transportation sector.

⁷ Currently, Honda operates 12 major U.S. manufacturing facilities, employing more than 31,000 associates in the production of not only Honda and Acura automobiles, but also power equipment products, powersports products, and advanced light jets. Cumulatively, Honda has invested more than \$20 billion in its U.S. sales, manufacturing and R&D operations, including over \$5.9 billion in new manufacturing investment over the past five years. For more information, see www.HondaInAmerica.com.

Despite continued development of exciting new automotive technologies, the long-term achievements of this industry will depend as much on policies as on powertrains. The regulatory framework and policy levers will define the landscape in which our industry operates and competes. Managing this transition thoughtfully is of paramount importance to industry and society alike.

II. Four critical considerations

The agencies' proposal requests comment on a wide range of topics, including overarching GHG and CAFE policy frameworks as well as numerous more discrete technical and policy issues. Honda appreciates the agencies' interest and robust consideration of the regulations. Our feedback begins at a high level, identifying what we see as four critical considerations for a successful regulatory program, expanding on the points below.

- Federal and California policymakers must work to maintain One National Program
- EPA should seek to maintain as much GHG stringency as possible
- EPA should support advanced technology vehicle (ATV) policy incentives, as these are essential to an electrified vehicle future
- Agencies should support regulatory compliance flexibility

A. Federal and California policymakers must work to maintain One National Program

Honda strongly supports Global Automakers' position regarding the importance of One National Program. We provide additional perspective on the topic below.

Today, 13 states and Washington, D.C. (Section 177 States for GHG) – collectively representing about 35% of the U.S. vehicle market – follow stringent California standards. For some automakers, market share subject to California regulations is even higher. The prospect of a bifurcated program in which 13 states (to date) follow stringent California standards and 37 states follow less-stringent federal standards presents a host of implementation challenges. The burden of managing separate fleets is not limited solely to increased compliance tracking under a patchwork of state-based regulations. It would also present distribution challenges, dealer equity issues, and possibly create border state cross-shopping issues resulting in market distortion and dealer concerns.

These concerns are not mere speculation. The auto industry today has real-world experience with the California Zero Emission Vehicle (ZEV) program, which has yielded at least three different marketing areas for automakers to consider, where customer receptivity, infrastructure, incentives and government support dramatically differ. This has prompted concrete marketing challenges and pricing differences between regions, reducing market efficiencies, creating significant distribution challenges and unnecessarily raising compliance costs, administrative costs and regulatory burdens.

This implementation burden, however, is minor compared to litigation and uncertainty concerns. Should California and the federal government be unable to agree on a single national program, it is reasonable to expect protracted litigation from multiple parties, on numerous fronts. As these cases work their way through the courts, automakers will have uncertainty about future regulatory direction, hampering our ability to strategically plan and efficiently invest resources. This uncertainty affects not only automaker planning, but supplier confidence; commitments and investments that are essential to our future success. As an industry whose products require long lead times, this problem is particularly severe.

As noted above, we strongly urge federal and California policymakers to reach a negotiated agreement that maintains One National Program. While this will require concessions from both sides, we believe this can be achieved with modest programmatic adjustments that will significantly reduce costs, protect the environment and benefit our customers. We remain convinced that such a solution exists, protecting each party’s key objectives while avoiding prolonged legal battles.

From this vantage point, we do not agree with the agencies’ reasoning regarding California’s authority to set its own standards. The agencies argue that preemption can result in one national standard.

Both EPCA and the CAA preempt State regulation of motor vehicle emissions (in EPCA’s case, standards that are related to fuel economy standards). The CAA gives EPA the authority to waive preemption for California under certain circumstances. EPCA does not provide for a waiver of preemption under any circumstances. In short, the agencies propose to maintain one national standard — a standard that is set exclusively by the Federal government.⁸

Despite the agencies’ assertion that a standard “set exclusively by the federal government” could be employed to “maintain one national standard,” we believe doing so would – at least for the next few years – have precisely the opposite effect. Efforts to preempt California would bring years of uncertainty for the auto industry while federal and state parties litigate and appeal court rulings. An effort would be made to enlist more states to take sides, further eroding the goal of a unified national market, the beneficiaries of which are the American people. A far better path would be for federal and state policymakers to negotiate a national program that is acceptable, if not ideal, for all parties including automakers.

⁸ Published in the Federal Register on August 24, 2018. (83 FR 42999)

Failure to achieve a negotiated agreement would have significant adverse environmental consequences. Because California and the Section 177 states account for just 35% of national vehicle sales combined, a bifurcated program of Augural standards (in 13 states) and the preferred alternative (in 37 states) would – at best – deliver 35% of the environmental benefits of a national Augural program. (See Figure 1.) Clearly, there is substantial room for a compromise position that yields greater environmental benefits.

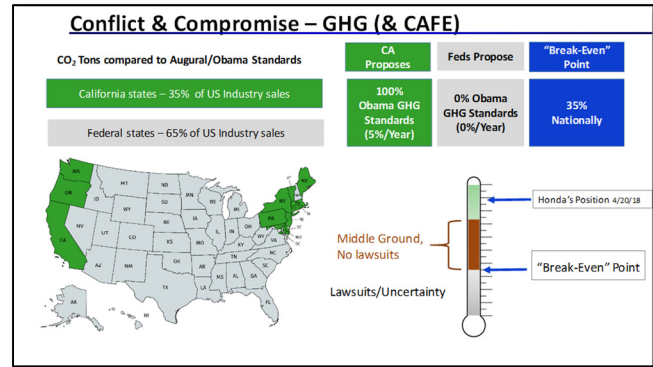


Figure 1. Conflict & Compromise – GHG (& CAFE)

B. EPA should seek to maintain GHG stringency

Consistent with Honda’s support for the goals of the 2017-2025 (ONP2) program, we believe it is appropriate to maintain topline targets of approximately 5% per year annual improvement (with advanced technology vehicle incentives noted below). While this is clearly a challenging goal, doing so would serve multiple purposes.

First, it would ensure the automotive industry plays a critical role in reducing global greenhouse gas emissions. Compared to a more modest stringency trajectory, aggressive targets would help ensure readiness to transition toward a future electrified vehicle fleet. Doing so is paramount to meeting mid-century climate goals, and without strong standards to guide industry as a whole, such investments may not be as broadly adopted or applied.

Second, industry has repeatedly asked that any standards updated through the midterm evaluation process be “durable,” meaning sufficiently robust to be maintained in the coming years and/or administrations. The standards proposed by the agencies today are intended to be in effect as many as eight years from now. For the automotive industry, such forward-looking certainty is highly valuable for strategic planning and investment decisions. Such certainty will only exist, however, if the standards are durable. Overly relaxed standards that prompt early reconsideration and abrupt truncation by future administrations undermine that certainty. The same is true for overly relaxed standards that face challenges in the courts. A far better solution is to set durable standards that embrace meaningful year-over-year stringency increases – standards upon which industry planners can rely both now and into the future.

Third, U.S. standards should be generally aligned with global regulatory direction. Fuel economy and vehicle GHG standards throughout the world are on a clear trajectory of increased stringency. Adopting the preferred alternative standards would make the U.S. an outlier with much of the rest of the world.⁹

⁹ <https://www.theicct.org/chart-library-passenger-vehicle-fuel-economy>

U.S. standards significantly out of line with those of other countries increases development burden, as it limits opportunity for shared powertrains and platforms – key elements of cost savings within the industry.

As noted above in our comments about One National Program (see Section II.A) and the need for an agreement with California, it is clear that simply based upon Nominal Stringency, there are more benefits retained from the Augural standards with national 2% stringency than with the proposed alternative and California and Section 177 states operating on augural standards (see Table 1).

Nominal Stringency (Applied Nationally)	Description	% of Augural Benefits Retained
5.0%	Augural	100%
4.0%	(not evaluated in NPRM)	80%
3.0%	(not evaluated in NPRM)	60%
2.5%	Alts 6, 7, 8 (LT3%, PC 2%)	50%
2.0%	(not evaluated in NPRM)	40%
California Only 5% / Federal Only 0%	Possible result if ONP fails and both CA & Feds regulate	35%
1.5%	Alts 4, 5 (LT 2%, PC 1%)	30%
1.0%	(not evaluated in NPRM)	20%
0.5%	(not evaluated in NPRM)	10%
0.0%	Proposed	0%

Table 1. Percent of Benefits Retained

The above observations notwithstanding, it is critical to note that annual fleet average stringency improvements alone – *at nearly any level* – will be insufficient to drive a transition toward a future electrified fleet. Bridging that transition will require advanced technology vehicle policy incentives (specifically, ATV multipliers and 0 g/mi upstream accounting, discussed below). Without those critical policy elements, policymakers will be severely handicapping the transition to vehicle electrification. And we believe an increasingly electrified national vehicle fleet is the future of the auto industry.

C. EPA should support advanced technology vehicle (ATV) policy incentives, as these are essential to an electrified vehicle future

Although incremental improvements continue to be made to conventional vehicle technologies, it is widely acknowledged that substantive decarbonization of the light duty transportation sector will require broad adoption of electrified vehicle technologies – hybrid-electric (HEV), plug-in hybrid electric (PHEV), battery electric (BEV) and/or fuel cell electric vehicles (FCEV). Today, adoption of these technologies remains low. Market penetration of HEVs hovers at around 3% nationwide nearly 20 years after their introduction in the United States. Meanwhile, the national adoption rate of PHEV, BEV and FCEV *combined* is only about 1%.

Although costs associated with ATV technologies – such as batteries, electric motors and power electronics – are expected to decline over time, those cost reductions are largely a function of additional technology development, increased sales volume and learning.¹⁰ Yet achieving such volumes is challenging, as the technologies remain cost-prohibitive today. This *Catch-22* presents a challenge to electric drive technology’s long-term commercial viability.

There is a solution, however. Two critically important policy incentives for these technologies – advanced technology multipliers and “0 g/mi” accounting – can effectively reduce costs of PHEV, BEV

¹⁰ For further information on cost learning, see 83 FR 43024.

and FCEV technologies, motivating industry to pursue development of these technologies. We discuss Honda's positions on these incentives in more depth, below.

1. Multipliers

Presently, manufacturers receive additional credit for selling PHEVs, BEVs and FCEVs in the form of sales multipliers, which allow manufacturers to count these vehicles as more than one vehicle in emissions compliance calculations. The magnitude of these multipliers – 1.6, 2.0 and 2.0 for PHEV, BEV and FCEV, respectively – is currently slated to decline over time, eventually phasing out after the 2021 model year.

Industry representatives have accurately noted that the 2021 phase-out of this incentive is premature, stifling the technology when incentives are most needed. As mentioned in the proposed rule, industry has requested that the multiplier program be continued.

Global Automakers recently recommended a multiplier of 3.5 for EVs and fuel cell vehicles which falls within the range of the examples provided below. EPA requests comments on extending or increasing advanced technology incentives including the use of 0 g/mile emissions factor for electric powered vehicles and multiplier incentives, including multipliers in the range of 2–4.5.¹¹

The value of multipliers to industry is that they can make long-term technologies as cost-effective as short-term technologies. This encourages investment in the long-term by reducing costs (and thereby reducing risk), providing a societal down-payment that is worth the short-term dilutive effects of the multiplier. Figure 2 shows a typical “technology cost curve,” with rising costs as CO₂ is reduced. The agencies' analysis, drawn from Volpe model output files, is shown in black. However, the agencies understandably do not take California's ZEV regulation into account. By urging the agencies and California to work together, we believe it is appropriate for the ZEV regulation to be analytically incorporated. We have estimated the cost impact of including ZEVs as shown in the blue line, which is a more accurate reflection of modeling automakers' obligations with and without ZEVs. The green line reflects the addition of multipliers as a policy lever to reduce electrification costs. As can be seen, multipliers are effective policy tools, in this case nearly improving the cost/benefit of electric technologies to those of advanced ICE technologies. In other words, implementing the ATV multipliers places the regulatory costs **including ZEVs** nearly on-par with the agencies' original analysis without ZEVs.

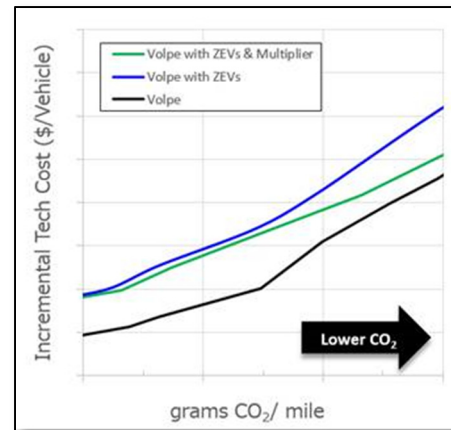


Figure 2. Incremental Technology Cost Curve to Reduce CO₂

¹¹ Published in the Federal Register on August 24, 2018. (83 FR 43461)

While there is broad support from industry for continuation of advanced technology multipliers, there is not automaker unanimity on the proper multiplier value. Honda strongly encourages a continuation of a multiplier incentive through model year 2026, but does have concerns that unduly high multiplier values could result in a credit windfall for some, leaving other manufacturers at a competitive disadvantage, and unduly diluting the effectiveness of CO₂ reduction.

On one hand, multipliers do provide clear societal benefit in encouraging a shift to greater levels of vehicle electrification. As a reasonable balance, Honda recommends maintaining advanced technology multiplier at 2018 levels – 2.0 for BEVs and FCEVs, and 1.6 for PHEVs – for model years 2019-2026. Doing so would help lay the groundwork for further development and sales of electrified vehicle technologies (delivering accompanying reductions in both oil consumption and GHG emissions), without excessively eroding the value of the regulatory program. We estimate the impact of multipliers in Table 2 to the right, based upon automakers meeting ZEV minimum requirements (in California and the Section 177 states).

	% of Augural Standards Retained ('21 - '26)
5% Stringency	100%
+ ATV Multipliers*	87%
4% Stringency	80%
+ ATV Multipliers*	67%
3 1/2% Stringency	70%
+ ATV Multipliers*	57%
3% Stringency	60%
+ ATV Multipliers*	47%

*Assumes ZEV minimums, PHEV30 & BEV200
Table 2. Percent of Benefits Retained

On the other hand, Honda recognizes there is a dilutive effect of multipliers on effective stringency. As such, we recommend multipliers be phased out beyond the 2026 timeframe of this regulation, and that credits garnered through the incentive be capped. Limiting the total credits from ATV multipliers is appropriate to prevent regulatory backsliding of the non-ATV fleet. Honda believes an ATV cap of 15 g/mi for the fleet (roughly equivalent to an OEM’s national market share of 15%) would serve as an effective policy incentive while not unduly eroding program benefits.

We also recognize that ATV multipliers are squarely within the purview of EPA, but fall outside NHTSA’s statutory bounds. Nevertheless, compensatory adjustment in stringency – for example, reducing the CAFE annual ramp rate by 0.5% below the stringency set by EPA – could provide sufficient room to help maintain regulatory alignment.¹²

2. 0 g/mi upstream

As noted earlier, the long-term solution for ultra-low carbon transportation requires vehicle electrification and, of course, a clean electric grid. As more plug-in electrified vehicles enter the marketplace, GHG emissions from powerplants become an increasingly important consideration. However, as a regulatory regime, it is fundamentally inappropriate to hold the auto industry accountable for these emissions. Automobile manufacturers have no control over the cleanliness of the utility grid now, nor in the future. As such, utilities should be held accountable for grid emissions, while

¹² Due to statutory limitations within the CAFE program, as well as different underlying statutory obligations between the CAFE and GHG programs, nominal CAFE stringency can and should be less stringent than GHG stringency to support harmonized implementation.

OEMs should be held accountable for pollutants emitted from the vehicle. Regulations of these two industries should not overlap.

Honda suggests the agencies reconsider the per-manufacturer cumulative production cap phase-in, and set a clear division of regulatory responsibility between the auto and utility industries. Providing electric drive vehicles 0 g/mi upstream accounting is not only philosophically appropriate, but will also help incentivize a shift toward greater levels of vehicle electrification.

D. The agencies should thoughtfully support regulatory compliance flexibility

Regulatory “flexibilities” built into the GHG and CAFE programs have become critical elements to the programs’ success. Such flexibilities serve numerous purposes. The Averaging, Banking and Trading (ABT) program, for example, allows automakers to comply in the face of product cadences with uneven sales that do not always match compliance obligations. Credit trading allows the government to set reasonable standards without fear of having to cater to the least-capable manufacturer. And the off-cycle technologies program fosters the development of innovative, cost-efficient solutions to meet energy and climate challenges.

Although the programs are not perfect in their implementation – the process for gaining credit approval of new off-cycle technologies warrants additional attention, for example – the value of “flexibilities” as a compliance tool should not be underestimated. From this point of reference, it is disconcerting to see the agencies considering whether flexibilities should be modified or even abandoned in lieu of general stringency adjustment:

With the exception of statutorily-mandated credits, the agencies seek comment on all aspects of the current system. The agencies are particularly interested in comments on flexibilities that may distort the market. The agencies seek comment as to whether some adjustments and non-statutory incentives and other provisions should be eliminated and stringency levels adjusted accordingly.¹³

In general, Honda strongly opposes elimination of compliance flexibilities. Regulations, by definition, distort the marketplace. The issue here, however, is whether the compliance flexibilities facilitate the achievement of the societal objective. Accordingly, the viability and efficacy of flexibilities should also be considered. Responses to specific flexibility-related requests for comment are included below.

1. Credit trading

The agencies request comment on transparency in the trading provision of the ABT program:

¹³ Published in the Federal Register on August 24, 2018. (83 FR 42998-9)

[C]redits can also be traded to other automakers for cash or for other credits for different fleets. But such trading is not pursued openly. Under the CAFE program, the public is not made aware of inter-automaker trades, nor are shareholders. And even the agencies are not informed of the price of credits... We seek comment on specific programmatic changes that could improve compliance with current standards in the most efficient way, ranging from requiring public disclosure of some or all aspects of credit trades, to potentially eliminating credit trading in the CAFE program.¹⁴

Honda supports maintaining the CAFE (and GHG) credit trading programs in their current forms. Although the agencies are correct that trading is not pursued openly, it is incorrect to suggest “the public is not made aware of inter-automaker trades.” In fact, NHTSA’s CAFE Public Information Center and EPA’s annual Manufacturer Performance Report detail credit balances and, in EPA’s case, the volumes of credits traded both into and out of OEMs’ credit banks for each of the compliance categories, for each model year. For parties who wish to gain a better understanding of CAFE and GHG credit markets, this is a wealth of publicly accessible information, with abundant transparency. We are not aware of any public concerns about the legitimacy of trades, but if so, confirmation by EPA and DOT staff guarantees that trades and resulting credit balances are accurately maintained.

Trading terms may also not be as simple as a spot purchase at a given price. Honda has undertaken a number of transactions for both CAFE and GHG credits, and there has been a range of complexity in these transactions due to numerous factors that are reflective of the marketplace, such as the volume of credits, compliance category, credit expiration date, a seller’s compliance strategy, and even CAFE penalty price in effect at that time. In addition, automakers have a range of partnerships and cooperative agreements with their own competitors. Credit transactions can be an offshoot of these broader relationships, and difficult to price separately and independently. Thus, there may not be a reasonable, or even meaningful, presentation of “market” information in a transaction “price.”

Finally, although neither pricing terms nor business partner pairings are explicitly identified, this information is highly competitive and, if made public, could divulge to competitors a buyer’s and/or seller’s future compliance strategy. For these reasons, Honda believes it is appropriate to maintain the confidentiality of trade terms, pricing information, and of trading partner identification.

2. Carry-forward of GHG credits

In the 2012 Final Rule covering model year 2017-2025 standards, EPA implemented a one-time carry-forward of GHG credits beyond the 5-year credit lifetime:

[T]o facilitate the transition to the increasingly more stringent standards, EPA proposed, and is finalizing under its CAA authority a one-time CO₂ carry-forward beyond 5 years,

¹⁴ Ibid.

such that any credits generated from MYs 2010 through 2016 will be able to be used to comply with light duty vehicle GHG standards at any time through MY 2021.¹⁵

This one-time carry-forward flexibility provides an “extended” lifetime for model year 2010-2015 credits (since model year 2016 credits are already eligible for use through 2021 given their five-year lifetime). It should be noted that this “one-time carry-forward” became law before the close of the 2012 model year, and before any automaker reported transactions. Thus automakers with surplus credits were informed of the carry-forward in advance of selling these credits.

In the past five years, Honda has sold more than twenty million GHG credits under the assumption that the credits would expire by model year 2021, as prescribed by law. In our experience, the value of credits is deeply related to their expiration date. The volume and price of our previous credit transactions could have been considerably different had they been informed by a different expiration schedule.

Some stakeholders, including Global Automakers, have expressed interest in GHG credits being granted additional “carry-forward” to model year 2026. Honda finds it helpful to consider the credits in question in two “vintage” groupings:

- (1) A second-time extension of model year 2010-2015 credits, through 2026
- (2) A first-time extension of model year 2016-2020 GHG credits, through 2026

Honda strongly disagrees that a second-time extension for model year 2010-2015 credits (group 1, above) is reasonable, for two reasons:

- It would benefit very few automakers, and provide one company in particular a profound competitive advantage
- Credits with longer-life have, in our experience, much higher value than shorter-life, expiring credits. Honda would be grievously disadvantaged by its good-faith efforts to rely on and abide by the law, and would be the victim of losses due to the retroactive extension of these credits.

Honda agrees that a one-time extension, through 2026, of model year 2016-2020 credits (group 2, above) would assist with general compliance flexibility. We believe that *relatively few* of the group 2 credits have been transacted yet, and thus there is substantially less harm to sellers who would have been impacted by the greater value of these credits with extended life.

3. Credit incentives for HEV light trucks and/or passenger cars

The agencies request comment on extending or expanding incentives currently in place for hybrid-electric pickup trucks.

¹⁵ “Final Rule for Model Year 2017 and Later Light-Duty Vehicle Greenhouse Gas Emission and Corporate Average Fuel Economy Standards.” Published in the Federal Register on October 15, 2012. (77 FR 62648).

EPA received input from automakers that these incentives should be extended and available to all light-duty trucks (e.g., cross-over vehicles, minivans, sport utility vehicles, smaller-sized pick-ups) and not only full size pick-up trucks... Some stakeholders have also suggested an additional credit for strong and mild hybrid passenger cars. EPA seeks comment on whether these incentives should be expanded along the lines suggested by stakeholders.¹⁶

Honda believes that, in light of high levels of petroleum consumption from the light duty truck segment, along with very modest application of HEVs to the light duty truck segment, it makes sense to expand this incentive to all light duty trucks. We disagree with those who assert that this incentive should be expanded to passenger cars.¹⁷ Although Honda would benefit from such an incentive, in our view, hybrid technology has been broadly applied to passenger cars, including highly popular models, and can reasonably be considered mature technology for passenger vehicle application.

While HEVs still only represent about 3% of nationwide sales, application of a passenger vehicle HEV credit – especially at levels suggested by some stakeholders – could unduly erode overall program benefits, while disproportionately benefitting certain companies over others. Honda believes it is important that fuel economy and GHG compliance frameworks be structured to allow fair competition between manufacturers. As the agencies work to finalize 2021-2026 standards, efforts should be made to ensure that regulations are equitable, and minimize disproportionate burdens and/or advantages on certain manufacturers over others.

4. Credits for connected/automated vehicles

There remains considerable uncertainty in the literature regarding the energy and environmental benefits (or negative benefits) of connected/automated vehicle technology. Honda believes that if technology benefits can be verified under robust, repeatable conditions, they should be warranted off-cycle credits under the existing off-cycle program. Honda does not believe credits should be granted for application of technology alone.

5. Off-cycle, A/C direct and A/C indirect

Honda supports Global Automakers' comments regarding off-cycle, A/C direct and A/C indirect credits. Along with our trade association, we also believe the HFC credit program should be maintained within EPA's GHG standards.

¹⁶ Published in the Federal Register on August 24, 2018. (83 FR 43461)

¹⁷ This is an issue where Honda diverges from the views of Global Automakers.

III. Additional feedback

Honda wishes to share the following comments on other elements of the agencies’ proposal. As noted above, for topics not addressed below, we generally support comments submitted by our trade association, Global Automakers.

A. Rebound Effect

The agencies request comment on the appropriateness and level of the “rebound effect,” as defined by the agencies below:

Increased driving because of better fuel economy. The “rebound effect” predicts consumers will drive more when the cost of driving declines. More stringent CAFE standards reduce vehicle operating costs, and in response, some consumers may choose to drive more.¹⁸

In the agencies’ opinion, rebound effects are a “voluntary consumer choice.”¹⁹ We agree with this assessment, and believe that the CAFE regulation was not intended as a VMT-constraining rule. In fact, it has generally been recognized that a higher amount of driving (VMT) is closely associated with increased economic activity,²⁰ higher economic growth and greater social benefits.

Honda believes the rebound effect should be considered narrowly within the scope of this regulation. Of course, it is essential to consider the negative externalities associated with increased VMT, particularly those associated with the mandated goals of the CAFE and GHG programs, to wit: reducing oil consumption and reducing pollution (from CO₂ and other pollutants). However, this analysis includes rebound effects in an overly broad and far-reaching manner, considering other negative externalities such as noise, congestion, crashes and fatalities purely estimated as a result of increased VMT. We believe this is misplaced. Neither the CAFE nor the GHG regulations were designed to measure, mitigate or manage these externalities, nor should they count against the overall benefits of this rule.

To put this in perspective, imagine a hypothetical set of GHG and CAFE regulations that:

- 1) reduced CO₂ and petroleum consumption – even including anticipated increases in total driving (the rebound effect)
- 2) cut the cost of driving in half on a per-mile basis
- 3) yet, failed to achieve net benefits due to other consequences of additional driving such as increased congestion, noise, crash costs and other social ills.

It would be exceedingly strange for regulators to withhold a huge benefit like reduced driving costs from the American people simply to head-off anticipated problems from additional driving. Surely the American people would implore regulators to reduce driving costs by half. The negative consequences of increased VMT (other than CO₂ increases and petroleum consumption increases) should be considered in other regulations and addressed in other contexts.

¹⁸ Published in the Federal Register on August 24, 2018. (83 FR 43107)

¹⁹ Ibid.

²⁰ https://www.fhwa.dot.gov/policy/otps/pubs/vmt_gdp/

B. Theoretical Fatalities Assessment

The agencies also seek comment on “changes to the safety analysis made in this proposal.”²¹ The agencies correctly identify three components of their modeled, theoretical fatalities: mass changes, sales impacts and rebound effects. According to the agencies, the difference in fatalities between the augural standard and the Proposal is summarized as follows:

**Table II-73 - Change in Safety Parameters from CAFE Augural Standards Baseline
Total Fatalities MY 1977-2029, 3% Discount Rate**

Change in Safety Parameters from Augural Standards Baseline								
Total Fatalities MY 1977-2029, 3% Discount Rate								
	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8
Fatalities								
Mass changes	-160	-147	-143	-173	-152	-73	-12	-30
Sales Impacts	-6,180	-5,680	-5,260	-4,280	-3,170	-2,550	-1,030	-1,480
Subtotal CAFE Attrib.	-6,340	-5,830	-5,400	-4,460	-3,330	-2,630	-1,050	-1,520
Rebound effect	-6,340	-5,960	-5,620	-4,850	-3,610	-3,320	-2,200	-2,170
Total	-12,700	-11,800	-11,000	-9,300	-6,940	-5,950	-3,240	-3,690

Our understanding of this table is that Alt 1 represents the agencies’ proposal to keep standards flat from MY 2020, which is estimated to reduce approximately 12,700 theoretical fatalities in model year 1977-2029 vehicles during calendar years 2018 through 2068. It should be noted that during this period of time, a total of more than 53.0 trillion driving miles are estimated, along with nearly 500,000 theoretical fatalities.

Honda’s comments on this safety analysis are as follows:

1. Rebound effects

As mentioned, above, the agencies note that rebound effects are a “voluntary consumer choice.”²² We agree with this assessment, and conclude that theoretical fatalities from rebound effects should not be considered in the agencies’ analysis.

2. Mass changes

Honda disagrees with the notion that mass reduction inherently yields safety risk. Deeper consideration of vehicle design elements is necessary to properly assess vehicle safety. Having reviewed the agencies’ modeling and methodologies, we believe that additional analysis should be considered in this area. We also note that these theoretical estimates are indistinguishable from background noise among the thousands of calculations and estimates necessary for this model.

²¹ Published in the Federal Register on August 24, 2018. (83 FR 43107)

²² Published in the Federal Register on August 24, 2018. (83 FR 43107)

3. Sales impacts

We do not disagree with the concept that significantly higher-priced new vehicles have the potential to depress the new vehicle market and thus increase the fleet of used vehicles, with concomitant increased safety risks associated with driving greater numbers of older vehicles in lieu of newer ones. However, we find the use of this previously untested model to be premature and ill-advised. The reasonableness of the so-called scrappage model, potential behavioral changes previously not considered in the model, the model's statistical uncertainties, and proper VMT accounting should all be reconsidered. A more thorough peer-reviewed process of vetting the model is appropriate before it is applied in these regulations. Honda commits itself to working with the agencies on evaluating and helping improve the scrappage model, moving forward.

a) VMT

A key element in the scrappage model is vehicle miles traveled (VMT). As stated in the agencies' Preliminary Regulatory Impact Analysis (PRIA):

"If demand for used cars and light trucks increases in response to the same factors that reduce new car sales, the value of used cars will rise... As a consequence, some [cars] that would otherwise have been retired will instead be kept in service. But if changes in prices and characteristics of new vehicles cause their sales to rise, demand for used cars and light trucks will decline, causing their value to decline and increasing the number of them that are retired. This will in effect result in a *transfer* of some travel (VMT) between new and used vehicles - in the first case more of total VMT will be driven in used cars and light trucks than under the baseline scenario, while in the latter case some will be *shifted* [emphasis added] from used models to the newly-purchased ones that replace them."²³ [emphasis added]

In the case of higher stringency and more expensive new cars, the scrappage model should *shift* VMT from new cars to older cars. However, data from published model outputs includes an unexplained *increase* in VMT. This appears to be an accounting error that requires correction. Evidence of this can be seen in the following charts, constructed from published agency model outputs that exclude rebound impacts. In Figure 3, we can see that

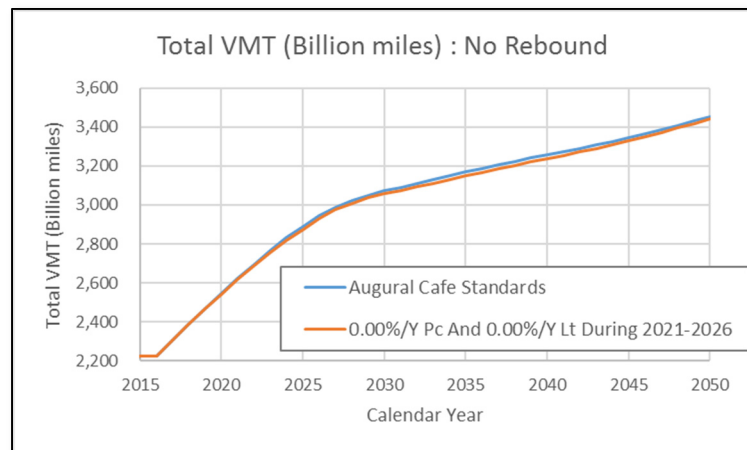


Figure 3. Total VMT by Calendar Year

²³ "Preliminary Regulatory Impact Analysis, The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Year 2021 – 2026 Passenger Cars and Light Trucks." p. 935. July 2018.

there is very little difference between the total fleet VMT for the augural standards and the proposed standards, as one would expect. However, upon close examination, there is a difference of approximately 1.2% in the *total VMT* between these two scenarios (preferred and augural). While this is a small difference, it is significant. The agencies, however, provide no explanation for this outcome. Assuming all other parameters are held constant – and excluding the rebound effect – it is not obvious why one scenario should have different total VMT than another. This phantom VMT (either disappearing in one scenario or appearing in another, depending on the point of reference) is troubling. We believe it is an artifact of a new, insufficiently matured model that needs further refinement and validation. We urge the agencies to investigate the phantom VMT phenomenon and correct the model accordingly.

On its face, a modest VMT discrepancy would seem inconsequential. We can see that calendar year–by–calendar year, the proposed standards appear to have up to 33 billion fewer miles/year driven than the augural standards – again, assuming no rebound effects. This is shown in Figure 4. One could reasonably expect this chart to be a flat line with no differences in total VMT by calendar year even if, as the agencies state in the PRIA, higher or lower prices could “...result in a *transfer* of some travel (VMT) between new and used vehicles.”

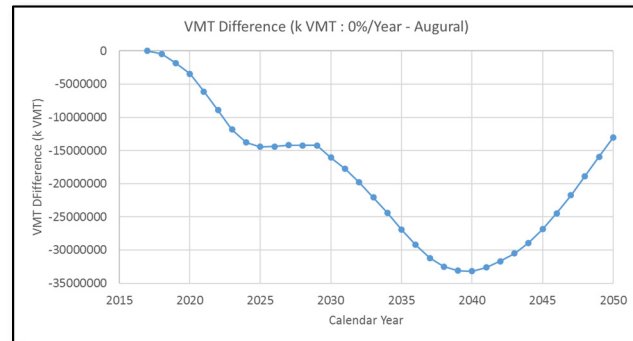


Figure 4. VMT Differences by Calendar Year

Comparing theoretical fatalities in the scrappage model (excluding rebound effects) with the phantom VMT, a very high correlation ($R^2 = 0.983$) can be observed (Figure 5). Using agency data, we compute this VMT discrepancy to account for more than 4,000 of the 6,180 theoretical fatalities associated with the scrappage model (details of this have been provided to the agencies in supplemental materials). VMT differences between scenarios is central to the effect of scrappage on theoretical fatalities. We believe that correcting this error in the scrappage model specifications will dramatically lower the agencies’ estimates of scrappage-related theoretical fatalities.

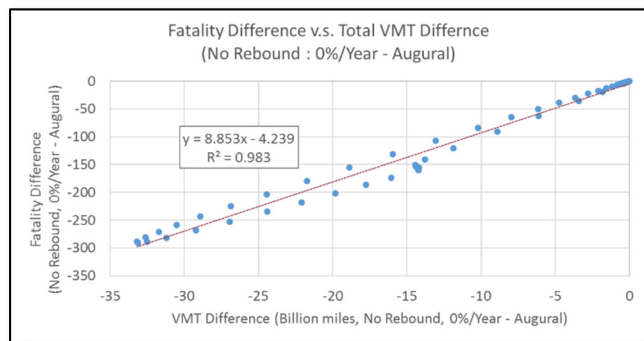


Figure 5. Correlation between Phantom VMT and Theoretical Fatalities resulting from two scenarios: Alternative 1 and Augural

b) Behavior changes

The agencies’ modeling of the scrappage effect is, as stated earlier, based upon the idea that regulations resulting in higher new car prices will result in fewer new car purchases, retention of older models and increased used car travel. The scrappage model – in a higher new car price scenario – decreases new car sales and increases the retention of older models. Increased retention of older models will occur among those vehicles with marginal utility (e.g. excess deterioration) regardless of model year. This marginal utility is represented in Figure 6. In this example, we believe that higher new car prices in 2020 will cause marginal (from a utility perspective) 2010 model year vehicles to remain in the fleet longer. The effect of this could very likely impact the overall VMT of the model year cohort as expressed in the equation “ $x - a\%$,” where x is the average VMT for the cohort before new car prices rise (and before marginal vehicles are encouraged to remain in the fleet longer), and $a\%$ is the effect on the cohort of averaging more, marginally useful vehicles. According to our calculations, if the impact of lowering the average cohort’s utility is even 0.2%²⁴, the augural standards would become *safer* than the preferred alternative. We believe that the agencies should consider VMT behavior change as part of an effort to mature and refine the scrappage model.

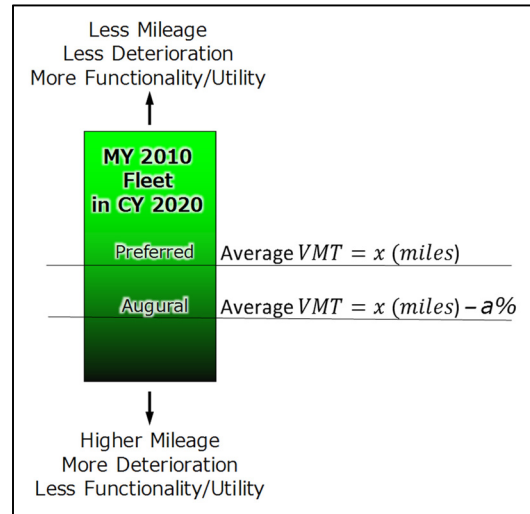


Figure 6. Change in average VMT for a cohort resulting from the addition of more marginal utility vehicles

c) Statistical significance

The agencies’ analysis contains insufficient estimates of statistical significance, which are essential to assessing whether an effect is distinguishable from noise. The scrappage model is based upon an elaborate algorithm (Figure 7) cited from section 8.10.7.7 of the PRIA:

$$\ln\left(\frac{s}{1-s}\right) = \beta_0 * Age + \beta_1 * Age^2 + \beta_2 * Age^3 + \ln(MY - 1959) * (\beta_3 + \beta_4 * Age + \beta_5 * Age^2) + New Price * (\beta_6 + \beta_7 * Age + \beta_8 * Age^2 + \beta_9 * Age^3) + Lag New Price * (\beta_{10} + \beta_{11} * Age + \beta_{12} * Age^2 + \beta_{13} * Age^3) + Lag2 New Price * (\beta_{14} + \beta_{15} * Age + \beta_{16} * Age^2 + \beta_{17} * Age^3) + Lag3 New Price * (\beta_{18} + \beta_{19} * Age + \beta_{20} * Age^2 + \beta_{21} * Age^3) + \beta_{22} * CP100M + \beta_{23} * Lag CP100M + \beta_{24} * New CP100M + \beta_{25} * Lag New CP100M + \beta_{26} * GDP Growth + \beta_{27} * Lag GDP Growth + \beta_{28} * Lag2 GDP Growth + \beta_{29} * Lag \ln\left(\frac{s}{1-s}\right) + \beta_{30} * Lag2 \ln\left(\frac{s}{1-s}\right) + \beta_{31} * Lag3 \ln\left(\frac{s}{1-s}\right) + \beta_{32} * CY2009 + \beta_{33}$$

Figure 7. Scrappage Model Specifications

²⁴ As an example, 10 year old vehicles as a cohort typically have annual VMT in the range of about 7,000 miles. We estimate the boundary condition where fatalities would be reduced to be 140 miles (-0.2% x 7,000 miles).

The coefficients for this remarkable algorithm are listed in Tables 8-10, 8-11, and 8-12 of the proposed rule, nearly 100 coefficients in all. And while there is an R^2 for the model as a whole (Cars at 0.9636, SUVs at 0.8885 and Trucks at 0.9271), this accuracy masks the statistical accuracy of the individual coefficients, helpfully shown with asterisks in the tables. Where asterisks exist, they reflect statistical significance varying from 1% to 10%. However, many coefficients include no indication of statistical significance, and we can only presume that these coefficients have statistical significance worse than 10%. OMB Circular A-4²⁵ establishes a best practice for regulatory analysis that strongly urges a transparent discussion of uncertainty, and recommends a Monte Carlo-style simulation of the statistical significance of the various elements in a model. The scrappage model alone estimates 6,180 theoretical fatalities out of a total population close to a half-million theoretical fatalities over a fifty year period, or approximately 1.25%. Without a thorough Monte Carlo-style analysis, one has very little confidence that this scrappage model (with or without the phantom VMT), can distinguish significant data from background noise.

As stated earlier, we do not dispute the theory that higher prices lead to depressed new car sales and therefore more used-car driving. We encourage the agencies to further develop and refine the scrappage model, subjecting it to peer review and thorough vetting. This will raise the public's confidence to incorporate its findings and rely upon its conclusions for important public policy decisions. Indeed, a good scrappage model could be used by policymakers to evaluate the impact on fatalities of a range of public policy decisions – including CAFE, GHG, various safety regulations and other regulations that burden new cars with costs. Unfortunately, as of this writing, the uncertainties associated with this model, leads us to believe that it is sufficiently flawed that it should not be considered in the cost-benefit analysis at this time.

C. The Social Cost of Carbon should include both domestic and international impacts

The 2017-2025 standards defined in the 2012 Final Rule – roughly 5% per year annual improvement – deliver significant environmental benefits. This societal goal should not be downplayed or dismissed. Indeed, an IPCC forecast²⁶ issued in October 2018 warns of significant adverse consequences, including coastal city flooding and global food shortages, barring an immediate, massive global effort to curb GHG emissions. According to the latest statistics, light duty transportation *alone* is responsible for more than 20% of all of U.S. GHG emissions.²⁷ It is appropriate that our industry shoulder its portion of responsibility to lower our nation's contribution to global climate change.

Analytically, the agencies propose to value carbon emissions based solely on domestic impacts. According to the NHTSA and EPA,

²⁵ <https://georgewbush-whitehouse.archives.gov/omb/circulars/a004/a-4.html#h>

²⁶ Intergovernmental Panel on Climate Change. Special Report on Global Warming of 1.5 °C (SR15). <http://www.ipcc.ch/report/sr15/>

²⁷ Oak Ridge National Laboratory, 2018. Transportation Energy Data Book, Edition 36. Tables 11.5 and 11.7.

[Executive Order] 13783 directed agencies to ensure that estimates of the social cost of greenhouse gases used in regulatory analyses “are based on the best available science and economics” and are consistent with the guidance contained in OMB Circular A-4, “including with respect to the consideration of domestic versus international impacts and the consideration of appropriate discount rates.”²⁸

Honda disagrees with this position. As greenhouse gases are a global pollutant, we believe it is inappropriate to limit the agencies’ analysis to domestic impact alone. If the practices of a foreign nation resulted in pollution to the U.S., we would expect that country to be responsible for costs associated with the clean-up. The same principle applies here. Honda suggests the agencies use a social cost of carbon that reflects the full value of its impact, including incorporation of both domestic and global impacts.

D. California’s Zero Emission Vehicle program

The agencies seek input on California’s Zero Emission Vehicle program and its relationship to the federal approach. The proposed rule raises a number of issues including whether ZEV is preempted by EPCA, whether the waiver should be withdrawn and whether “elimination of California’s ZEV program will allow automakers to develop such [Zero Emission] vehicles in response to consumer demand instead of regulatory mandate.” We understand that the purpose of regulations is to effect market change for societal benefit that would not be driven solely “in response to consumer demand.” On the other hand, there must be a balance. Obligating sales where significant market barriers exist must be done cautiously. An industry’s economic sustainability is not viable if regulatory demands are so dissociated from market realities.

As we stated earlier, the industry is united in its request that the agencies work out an agreement with California. This implies, and we accept, that the request to negotiate an agreement with California will very likely result in the continuation of the ZEV program. However, this does not mean that the ZEV mandate should continue as it is, nor does it mean that the mandate presents no significant burdens to industry. We implore the agencies and California to take this opportunity to improve the ZEV regulation and set it on a course whereby automaker success is possible.

As the Global Automaker comments make abundantly clear – and Honda agrees – the implementation and market acceptance of the ZEV regulation in California is significantly different than its implementation and market acceptance in the Section 177 states. The state of California has made a top-to-bottom commitment to the successful introduction and marketing of ZEVs. The governor has implemented a high-level task force engaging top personnel in nearly every major state agency for many years. The California ZEV Action Plan engages top representatives of the California Public Utilities Commission, the California Energy Commission, the California Air Resources Board, the California Department of Motor Vehicles, the California Department of Transportation (CalTrans) and many more

²⁸ PRIA, p. 1067

agencies on reducing regulatory barriers and increasing the success of marketing ZEVs by automakers. Meanwhile, the California legislature has consistently supported incentives, infrastructure and HOV lane access for ZEVs. California has employed a carrot and stick approach that has emphasized the carrots as much as, if not much more than, the stick.

The Northeast ZEV states are in a completely different position. They have the beginnings of a ZEV Action Plan, however its implementation has delivered a ZEV adoption rate that is only a fifth of that seen in California. Global Automakers points out potentially contributing market factors as well as governmental actions that differ significantly from California, including differences in climate, demand for light trucks and all-wheel drive vehicles. A recent survey of marketing efforts shows that the Honda Clarity PHEV is offered for lease in California for \$289/month with a \$2,999 down payment, and sales are steady. In the Northeast, however, the same vehicle is offered for \$209/month and a down payment of \$2,399. The lower price of the Clarity PHEV in the Northeast is evidence of a substantially different market.

As noted earlier, the strong support for One National Program (ONP) is to avoid a bifurcated market. Regrettably, the ZEV regulation is the poster child for bifurcated markets. It fragments the market into ZEV and non-ZEV markets and, within the ZEV markets, creates an Eastern Region, Western Region (Oregon) and California. The ZEV regulation obligates manufacturers to market specific vehicles in specific cities, states and regions. It places a significant burden on automakers, especially when these markets have not had the benefit of market preparation, political and regulatory leadership, and other necessary efforts to help with this technological, behavioral and market transition.

We believe this administration places a priority on reducing and simplifying regulations wherever possible. There is an opportunity, here, to reduce the compliance costs of the ZEV program without substantially weakening the program's goals. Unquestionably, the ZEV regulation overlaps the GHG and CAFE programs; however, we should strive to maximize complementarity, and minimize conflict.

E. Computer model feedback (NHTSA/Volpe CAFE model; EPA OMEGA model)

Over the past few years, Honda acquired a reasonable amount of expertise running the agencies' main computer models used in the standard-setting process: EPA's OMEGA model, and NHTSA's CAFE model, sometimes referred to as the "Volpe model." In doing so, we developed insights on the pros and cons of both models. We share our general thoughts on the models below, in hopes that constructive feedback can further improvements to the agencies' modeling efforts, increasing their value in the rulemaking process.

While we cannot comment on the models' accuracy of our competitors' compliance costs, in our judgement the current version of the CAFE model is reasonably accurate in terms of technology efficiency, cost, and overall compliance considerations, and reflects a notable improvement over previous agency modeling efforts conducted over the past few years. We found the CAFE model's

characterization of Honda's "baseline" fleet – critical modeling minutiae that provide a technical foundation of the agencies' analysis – to be highly accurate. We commend NHTSA and Volpe Center staff on these updates, as well as on the overall transparency of the model. The model's graphical user interface (GUI) makes it easier to run, model functionality is thoroughly documented, and the use of logical, traceable input and output files accommodates easy tracking of results.

There is, of course, always room for improvement. One of the major constraints of the CAFE Model is that it only considers technology through model year 2025-26, taking a more myopic view of technology application than might otherwise be the case. (EPA's OMEGA model shares similar limitations.) While its modeling logic applies low-cost technologies first, in Honda's view, some of these technologies look promising for the short-run (through 2026), but not for the long-run (2030, 2035 and beyond). Indications today suggest that EPA, NHTSA, CARB, industry and the general public alike all expect long-term goals of reduced emissions and petroleum consumption to continue beyond 2026. Yet by drawing a boundary at 2025-26, the model forces itself into myopic "technology walks." For reasons of confidentiality, we do not detail specifics here; detailed information on this topic was shared with the agencies under CBI protection, as appropriate.